



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/783,875	02/20/2004	Christoph Schultheiss	K 224	7734

7590 02/23/2009  
KLAUSE J. BACH & ASSOCIATES  
PATENTS AND TRADEMARKS  
4407 TWIN OAKS DRIVE  
MURRYSVILLE, PA 15668

EXAMINER
----------

CHORBAJI, MONZER R

ART UNIT	PAPER NUMBER
----------	--------------

1797

MAIL DATE	DELIVERY MODE
-----------	---------------

02/23/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/783,875	<b>Applicant(s)</b> SCHULTHEISS, CHRISTOPH	
	<b>Examiner</b> MONZER R. CHORBAJI	<b>Art Unit</b> 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) 4-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

**This non-final action is in response to the RCE received on 1/16/09**

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schoenbach (Bacterial Decontamination of Liquids with Pulsed Electric Fields) in view of Doevenspeck (U.S.P.N. 3,679,556).

Schoenbach discloses a method for the bacterial decontamination of, for example, milk or juices (milk is considered the processing liquid) having microorganisms (experimental results section on page 639) where pulsed electric fields are generated and applied to cause rupture of cell membranes (The effects of pulsed electric fields on biological cell section on page 638) using electroporation technique. The electric fields are only generated between opposing electrodes having a capacitor and switch (pulse

Art Unit: 1797

shape section on page 640) during the discharge that are energized by a high voltage source as shown in figure 4 on page 640 where the duration of the applied electric field ranges from 1 ms to 50 ns (conclusion section on page 643). Schoenbach further teaches applying sequential electrical pulses (considered as preventing time-overlap) that are separated by 1 ms time intervals (pulse shape section on page 641) where one of ordinary skill in the art would readily recognize that the capacitor is recharged between sequential pulses. Furthermore, Schoenbach discloses a typical characteristic dimensions (considered the longitudinal axes Z of the cells of the process material) of 1 micrometer for certain bacteria (right column of the effects of pulsed electric fields on biological cells section on page 638) that is momentarily present in the electrical field of at most 1 microsecond (conclusion section on page 643). As to the threshold potential difference equaling 10 V, Schoenbach recognizes that a 1 V potential across the outer membrane of a cell is necessary but insufficient to cause death by electroporation and further teaches that for pulses of submicrosecond duration, higher electric fields are required (right column of the effects of pulsed electric fields on biological cells section on page 638). One of ordinary skill in the art would recognize that for pulse durations of less than 1 microsecond, greater values of electric fields are required, which means higher values for electric field potential. It would have been obvious to one having ordinary skill in the art to determine, through routine experimentation, the length of pulse duration, strength of electric field which would produce the optimum pasteurization of organic process material. It would have been obvious to one of ordinary skill in the art

Art Unit: 1797

to use higher field strength (10V) and a shorter duration (1ms) in order to provide a quick pasteurization of material.

Schoenbach fails to teach whether the electrodes are normal or not to each other and does not teach if the device is flow through having electrodes distributed over a longitudinal area of the reactor where the bottom electrodes are grounded.

Doevenspeck discloses a flow through device (see device in figure 2 having inlet 10 and outlet 15) for sterilizing liquids using electric fields (col.1, lines 17-25) having positive and negative electrodes distributed in alternating positions (figure 2:14 and 13) so that a device that is simple in design is obtained that can be readily adapted to varying operational requirements by increasing or decreasing the number of cascades for achieving optimum efficiency (col.2, lines 53-58). Furthermore, the electrodes are distributed over one side of a longitudinal passage of the reactor (12) where the bottom electrodes (figure 2:13) are grounded (col.4, lines 43-45). The alternating positive electrodes (figure 2:14) are distributed in spaced relationship (positive electrodes 14 are positioned in a spaced relationship over negative electrodes 13 as shown in figure 2) over an opposite side of the longitudinal flow passage (considered the unlabeled lengthwise of container 12 where fluid enters at inlet 19 and exits at outlet 15 as shown in figure 2) of the reactor where the positive electrodes (figure 2:14) are connected to the voltage source (col.4, lines 33-39 where the positive electrodes are considered the electrodes that generate the pulse) and the grounded negative electrodes (figure 2:13) in Doevenspeck are like the alternating electrodes in figure 2 of the specification where such a geometrical positioning of the electrodes results in having no electric fields axes

Art Unit: 1797

that extend normal to the flow direction of the process material flowing through the longitudinal flow passage (considered the unlabeled lengthwise of container 12 where fluid enters at inlet 19 and exits at outlet 15 as shown in figure 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the method in Schoenbach with the alternating electrodes so that a device that is simple in design is obtained that can be readily adapted to varying operational requirements by increasing or decreasing the number of cascades for achieving optimum efficiency as explained by Doevenspeck (col.2, lines 53-58).

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schoenbach (Bacterial Decontamination of Liquids with Pulsed Electric Fields) in view of Doevenspeck (U.S.P.N. 3,679,556) as applied to claim 1 and further in view of Mittal et al (U.S.P.N. 6,093,432).

Schoenbach and Doevenspeck do not teach values for the potential difference that is greater than or equal to 100 v. Mittal generates potential difference at 15 kV (col.5, lines 1-4 and col.11, lines 14-17) in a treatment chamber containing apple cider, because this method provides no significant heating of the foodstuff or loss of natural vitamins and flavours (col.11, lines 27-31). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Schoenbach/Doevenspeck with the electric potential value of 15 kV, because such a potential results in having no significant heating of the foodstuff or loss of natural vitamins and flavours as explained by Mittal (col.11, lines 27-31), while providing adequate pasteurization of the food product.

Art Unit: 1797

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Schoenbach (Bacterial Decontamination of Liquids with Pulsed Electric Fields in view of Doevenspeck (U.S.P.N. 3,679,556), Mittal et al (U.S.P.N. 6,093,432) as applied to claim 2 and further in view of Cheever (U.S.P.N. 4,305,000).

Schoenbach, Doevenspeck, and Mittal do not teach using Marx generator in connection with spark gap structures. Cheever sterilizes materials using an irradiation apparatus having Marx generator in connection with spark gap structures (col.4, lines 31-34 and col.5, lines 39-44), because such a device allows for a greatly increased range of voltage variation within which operation of the system is permissible (col.2, lines 36-39). As to the limitation that the voltage increase to the voltage maximum of at most 1 MV occurring not longer than 100 microseconds, Cheever considers electric-discharge pulses of the order of 100 to 500 KV as low energy that are generated over 50 to 150 nanoseconds (col.7, lines 2-7. For example, 50 nanosecond is much smaller time interval than 100 microseconds). One of ordinary skill in the art would readily recognize that at a much longer time interval of 100 microseconds as claimed, Cheever's Marx generator produces a steep voltage increase of 1 MV. It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the modified method in Schoenbach/Doevenspeck/Mittal with the Marx generator, because such a device allows for a greatly increased range of voltage variation within which operation of the system is permissible as explained by Cheever (col.2, lines 36-39).

***Response to Arguments***

6. Applicant's arguments filed on 1/16/09 have been fully considered but they are not persuasive.

On pages 7-8 of the Remarks section; Applicant argues that the field lines in Doevenspeck extend normal to the flow direction of the process liquid flowing through the flow passages; and that Doevenspeck does not disclose electroporation field axes between the electrodes of the flow passages which extend normal to the flow direction of the process fluid.

Doevenspeck discloses a flow through device for sterilizing liquids using electric fields having positive and negative electrodes distributed in alternating positions. The electrodes are distributed over a longitudinal area of the reactor where the bottom electrodes (13) are grounded. The alternating positive electrodes (14) and the grounded negative electrodes (13) in Doevenspeck are like the alternating electrodes in figure 2 of the specification where such a geometrical positioning of the electrodes results in having no electric fields axes that extend normal to the longitudinal axis of the reactor.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONZER R. CHORBAJI whose telephone number is (571)272-1271. The examiner can normally be reached on M-F 9:00-5:30.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone



Art Unit: 1797

number for the organization where this application or proceeding is assigned is 571-273-8300.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. R. C./

/Jill Warden/  
Supervisory Patent Examiner, Art Unit 1797